



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/524,536

02/14/2005

Mats Hedman

1509-1044

1516

466 7590 05/14/2008

YOUNG & THOMPSON
209 Madison Street
Suite 500
ALEXANDRIA, VA 22314

EXAMINER

WEINSTEIN, LEONARD J

ART UNIT

PAPER NUMBER

3746

MAIL DATE

DELIVERY MODE

05/14/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/524,536	Applicant(s) HEDMAN, MATS	
	Examiner LEONARD J. WEINSTEIN	Art Unit 3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 March 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 19, 2008 has been entered.
2. The examiner acknowledges the amendments to claims 1 and 3-14. The examiner notes that claim 2 has been canceled and claim 15 has been added.

Claim Objections

3. Claims 12 and 13 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claims 12 and 13 were amended to depend from claim 1 and set forth the same limitations that are recited in claims 3 and 4. Claims 3 and 4 also depend from claim 1 and as such contain all the limitations which are claimed in claims 12 and 13.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
5. Claims 3-4, 6, and 12-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 3-4 and 12-13 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission

Art Unit: 3746

amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: the elements which perform operations that can be measured in "frequency of cycles" as "revolutions per minute." As best understood by the examiner after a review of the specification the limitations as claimed are considered to be define as follows:

- "frequency of cycles" will be considered to be --- a cycle comprises one intake stroke and one evacuation stroke of the piston, wherein the frequency of cycles --- (finding support on page 5, lines 1-3)
- "revolutions per minute" will be considered to be --- revolutions per minute of a engine shaft connected to the piston --- (finding support on page 7, lines 32-37).

6. Claim 6 recites the limitation "the conduit" in lines 4-5. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-7 and 11-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Kawasaki et al. US 2001/0013333. Kawasaki teaches all the limitations as claimed for a control method for controlling a gas flow by a compressor including: **[claim 1]** the step of the method wherein a compressor, as shown in figure 1, having a piston (fig. 1) in which a volume is expanded during an intake stroke and the introduced volume of gas is compressed and taken out through an operable outlet valve 14 during an evacuation stroke, and in which the

Art Unit: 3746

compressor (fig. 1) has a controllable inlet valve 12 that is pneumatically, hydraulically or electromagnetically operable and that is opened and closed upon basis of a signal from a control system 38, wherein the inlet valve 12 is kept closed during at least a part of an intake stroke somewhere along a path of said piston (fig. 1) from an upper dead point to a lower dead point (§0024 and claim 10); **[claims 3 and 12]** Kawasaki further teaches the step of the method wherein a cycle can comprise one intake stroke and one evacuation stroke of the piston (fig. 1), and a frequency of cycles with closed intake stroke is varied between 0% and 100% of the number of revolutions per minute of a engine 10 shaft (fig. 1) connected to the piston (fig. 1) in order to, at the given number of revolutions per minute, deliver the amount of the compressed gas required for the moment (§0025; §0033); **[claims 4 and 13]** the step of the method wherein between each cycle or each continuous series of cycles with closed intake strokes, an equal amount of revolutions are performed (§0025; §0033; §0035); **[claim 5]** the step of the method inlet valve 12 is closed upon transition, or after the transition, from intake stroke to evacuation stroke (§0024 – last sentence); **[claim 6]** a inlet of the compressor (fig. 1), besides the controllable inlet valve 12, comprises a non return valve 40 for inflow, and a conduit 18 for supply of gas to the latter is throttled down or closed by means of a closure member 42 arranged by the non return valve 12, by controlling the gas pressure in a tank (not shown) associated to the compressor, shown in figure 1; **[claim 7]** the step of the method wherein the closure member 42 is a controllable valve, which is opened and closed upon basis of a signal from the control system 38; **[claim 11]** and the step of the method wherein a computer program, as shown by the procedure carried out by element 38 in figure 3, adapted is for executing the control method according to claim 1.

Art Unit: 3746

Further Kawasaki teaches all the limitations as claimed for a control method for controlling the gas flow by a compressor having a piston, as shown in figure 1, comprising: **[claim 14]** expanding the volume of an introduced gas during an intake stroke, compressing the introduced volume of gas and evacuating the same amount of gas introduced through an operable outlet valve 14 during an evacuation stroke, pneumatically, hydraulically or electromagnetically operating a controllable inlet valve 12 of the compressor (fig. 1) to open and close upon a basis of a signal from a control system 38, and keeping the inlet valve 12 closed during at least part of an intake stroke somewhere along a path of said piston (fig. 1) from upper dead center to lower dead center (¶0024 and claim 10).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1 and 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schecter US 6,223,846 in view of Kawasaki et al. US 2001/001333. Schecter teaches all the limitations as claimed for a control method including: **[claim 1]** the step of the method wherein a compressor, as shown in figure 2, having a piston 14 in which a volume is expanded during an intake stroke and the introduced volume of gas is compressed and taken out through an operable outlet valve 22 during an evacuation stroke, and in which the compressor (fig. 2) has a controllable inlet valve 20 that is pneumatically, hydraulically or electromagnetically operable and that is opened and closed upon basis of a signal from a control system 70; **[claim 8]** the step wherein, apart from the non return valve 22 for outflow, the method includes a

Art Unit: 3746

controllable outlet valve 24 which is pneumatically, hydraulically or electro-magnetically operated and which opens and closes upon basis of a signal from the control system 70; **[claim 9]** the step wherein the outlet valve 24 is opened as there is a pressure balance between the gas to be evacuated and the gas on the opposite side of the outlet valve 24, the latter being controlled by means of a sensor (col. 19 ll. 63-col. 21 ll. 21) that registers a cylinder 16 pressure that is compared to the pressure in a tank 56 registered by another sensor, elements 72 and 74) (col. 19 ll. 63-ll. 21); **[claim 10]** the step of the method wherein a conduit 50 that extends between the compressor (fig. 2 – 16) and the tank 56 fulfills the need of pressurized gas between the compressor (fig. 2 – 16) and the equipment that will use the pressurized gas, one of elements (col. 14 ll. 44-54).

Schechter fails to teach the following limitations that are taught by Kawasaki for a control method including: the step of the method wherein a compressor, as shown in figure 1, having a piston (fig. 1) in which a volume is expanded during an intake stroke and the introduced volume of gas is compressed and taken out through an operable outlet valve 14 during an evacuation stroke, and in which the compressor (fig. 1) has a controllable inlet valve 12 that is pneumatically, hydraulically or electromagnetically operable and that is opened and closed upon basis of a signal from a control system 38, wherein the inlet valve 12 is kept closed during at least a part of an intake stroke somewhere along a path of said piston (fig. 1) from an upper dead point to a lower dead point (¶0024 and claim 10). Kawasaki teaches that the a targeted air intake that is produced by operating a intake valve to open before or after a piston comes to bottom dead center position during an intake stroke results in the substantial reduction of an undesired torque gap and increased drivability. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify a method for controlling a

Art Unit: 3746

compressor as taught by Schecter to incorporate the step of closing an intake valve before a piston reaches a bottom dead center position during an intake stroke as taught by Kawasaki in order to provide a compressor that operates with a reduced torque gap (Kawasaki - ¶0007; ¶0008).

11. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawasaki et al. US 2001/0013333 in view of Mendler US 6,125,801. Kawasaki teaches all the limitations as claimed as discussed including a compressor connected to a combustion engine 10, but fails to teach the following limitations that are taught by Mendler for a method of controlling a gas flow by a compressor including: the step of the method wherein air is supplied with pressurized air from a turbo or screw compressor 20 of said combustion engine 8. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify a method for controlling a flow of gas from a compressor connected to a combustion engine as taught by Kawasaki to incorporate the step of supplying pressurized air to a compressor as taught by Mendler in order to increase a compression ratio and provide for more rapid combustion (Mendler - col. 2 ll. 62-64).

Response to Arguments

12. Applicant's arguments with respect to claims 1 and 3-14 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEONARD J. WEINSTEIN whose telephone number is (571)272-9961. The examiner can normally be reached on Monday - Thursday 7:00 - 5:30.

Art Unit: 3746

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on (571) 272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Devon C Kramer/
Supervisory Patent Examiner, Art Unit
3683

/Leonard J Weinstein/
Examiner, Art Unit 3746